

<div style="display: inline-block; vertical-align: middle; text-align: center;"> United States Environmental Protection Agency Washington, DC 20460 Work Assignment </div>		Work Assignment Number <div style="border: 1px solid black; padding: 2px; display: inline-block;">0-33</div>	
		<input type="checkbox"/> Other <input type="checkbox"/> Amendment Number:	
Contract Number <div style="border: 1px solid black; padding: 2px; display: inline-block;">EP-C-09-027</div>	Contract Period <div style="border: 1px solid black; padding: 2px; display: inline-block;">4/1/09 - 3/31/10</div>	Title of Work Assignment/SE Site Name <div style="border: 1px solid black; padding: 2px; display: inline-block;">Decon Chamber Installation</div>	
Contractor <div style="border: 1px solid black; padding: 2px; display: inline-block;">Arcadis</div>		Specify Section and Paragraph of Contract SOW <div style="border: 1px solid black; padding: 2px; display: inline-block;">Sections 2 and 3</div>	
Purpose: <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div> <input checked="" type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Work Plan Approval </div> <div> <input type="checkbox"/> Work Assignment Close-Out <input type="checkbox"/> Incremental Funding </div> </div>		Period of Performance From <div style="border: 1px solid black; padding: 2px; display: inline-block;">04/6/09</div> To <div style="border: 1px solid black; padding: 2px; display: inline-block;">03/31/10</div>	
Comments: This is a continuation of a work assignment under Arcadis contract EP-C-04-023 Option Period IV WA 4-24. Full Work Assignment Title is: INSTALLATION OF CHAMBER AND HEATING, VENTILATION, AND AIR CONDITIONING SYSTEM FOR NNSRC'S DECONTAMINATION CHAMBER			
<input type="checkbox"/> Superfund		Accounting and Appropriations Data	
		<input checked="" type="checkbox"/> Non-Superfund	
Note: To report additional accounting and appropriations data use EPA Form 1300-69A			
SFO (Max 2) <div style="border: 1px solid black; padding: 2px; display: inline-block;">22</div>			
DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)
Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)
Site/Project (Max 8)	Cost Org/Code (Max 7)		
1			
2			
3			
4			
5			
Authorized Work Assignment Ceiling			
Contract Period		Cost/Fee	LOE
			0
This Action			1252 ✓
Total			1252
Work Plan / Cost Estimate Approvals			
Contractor WP Dated:		Cost/Fee	LOE
Cumulative Approved		Cost/Fee	LOE
Work Assignment Manager Name		Branch/Mail Code	
<div style="border-bottom: 1px solid black; display: inline-block;">CN=Shannon Serre/OU=RTP/O=USEPA/C=US</div>		<div style="border-bottom: 1px solid black; display: inline-block;">03/27/2009</div>	
(Signature)		(Date)	
Project Officer Name		Branch/Mail Code	
<div style="border-bottom: 1px solid black; display: inline-block;">Diane L Pierce</div>		<div style="border-bottom: 1px solid black; display: inline-block;">4/3/09</div>	
(Signature)		(Date)	
Other Agency Official Name		Branch/Mail Code	
<div style="border-bottom: 1px solid black; display: inline-block;"></div>		<div style="border-bottom: 1px solid black; display: inline-block;"></div>	
(Signature)		(Date)	
Contracting Official Name		Branch/Mail Code	
<div style="border-bottom: 1px solid black; display: inline-block;">Renita Tyus</div>		<div style="border-bottom: 1px solid black; display: inline-block;">CPod</div>	
(Signature)		(Date)	
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		FAX Number: 513-487-2109	

STATEMENT OF WORK

INSTALLATION OF CHAMBER AND HEATING, VENTILATION, AND AIR CONDITIONING SYSTEM FOR NHSRC'S DECONTAMINATION CHAMBER

DCMD 3.40 (APPCD ON-SITE CONTRACT)

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I. TITLE

Installation of chamber and heating, ventilation, and air conditioning system (HVAC) for NHRSC's Decontamination Chamber

II. PERIOD OF PERFORMANCE

The period of performance for the work under this work assignment shall be from date of award through March 31, 2010.

III. SUMMARY OF OBJECTIVES

The proposed effort involves the completion of the installation of the new NHRSC decontamination chamber located in High Bay Room 130. The effort also involves the installation of a heating, ventilation, and air conditioning (HVAC) control system for this chamber that is being installed. The HVAC control system will be used to set, maintain, and control the temperature, relative humidity, and number of air changes per hour within the decontamination chamber. The HVAC control system will also be used to remove any biological organisms and/or chemicals that may be released inside the chamber prior to exhausting the gas flow to the high bay exhaust duct.

IV. BACKGROUND

NHRSC is currently investigating the efficacy of decontamination technologies for chemical, biological, and radiological agents using laboratory-scale studies. These studies typically utilize procedures suitable for generating high-quality, reproducible data related to the effectiveness of technologies as a function of agent, material type, and application or operating conditions. Additional studies are also on-going to investigate the engineering aspects associated with scale-up of the application of the technology from the laboratory to the field setting. Current methodologies do not involve application of the technologies at the scale that allows for direct correlation to a field application. In advancing EPA's ability to respond and recover from intentional releases of chemical, biological, or radiological contamination of sites, larger-scale research environments are required in which application of technologies and procedures that show promise at the laboratory scale can be employed. A chamber has been constructed in which these technologies can be tested on a large-scale environment. The premise of this work assignment is to provide a system that can control the temperature, relative humidity, and number of air changes per hour of the chamber.

V. TECHNICAL APPROACH

This effort involves completion of the installation of the decontamination chamber and installation of the HVAC control system on the decontamination chamber and demonstration that the system meets the design specifications. The chamber and HVAC system have already been designed and procured as part of a previous work assignment.

VI. FACILITIES

The chamber is currently located in High Bay Room 130. The HVAC control system shall be permanently installed on the decontamination chamber. The HVAC control system for the air lock on the decontamination chamber is not within the scope of this project; however, the cleanup system for the exhaust from the air lock is included within the scope of this project.

VII. TASKS

All tasks shall be completed according to the Deliverables Schedule (Table 1) in Section VIII. The design specs for the chamber are shown below. Some preliminary specifications that the HVAC control system shall meet are included below.

(A) The HVAC system shall be capable of maintaining the temperature inside the decontamination chamber in the range of 60 °F to 95 °F, with a tolerance of ± 3.6 °F.

(B) The HVAC system shall be capable of maintaining the relative humidity (RH) inside the decontamination chamber in the range of 30% to 85%, with a tolerance of ± 4 %. It is anticipated that a steam generator will be required to meet the high RH requirement of this task.

(C) The number of air changes in the decontamination chamber shall be adjustable in the range of 0.5 to 3 per hour.

(D) The supply line shall include a granular activated carbon (GAC) bed, high efficiency particulate air (HEPA) filter to remove any contaminants before the chamber. The GAC filter and HEPA filter shall be able to be readily changed as part of routine maintenance on the facility.

(E) The exhaust duct from the decontamination chamber shall include a moisture condenser which will be used to drop the moisture level in the exhaust gas stream to a dew point lower than 60 °F. The condenser shall be constructed out of 316 stainless steel to minimize corrosion and be easily cleaned and replaced. It is anticipated that the condenser will use chilled water from the high bay facility.

(F) The exhaust duct from the decontamination chamber shall include a granular activated carbon (GAC) system which will be used to scrub out any decontamination agents that may be present. The bed volume will be determined with consultation of the WAM. The GAC system shall be of a parallel bed design which will allow one bed to be serviced while the other is in service. This will prevent breakthrough from the system. The GAC bed shall be able to be changed as part of routine maintenance on the facility.

(G) The exhaust duct from the decontamination chamber shall include a high efficiency particulate air (HEPA) filter. The HEPA filter shall be installed downstream of the GAC bed.

(H) The exhaust duct from the air lock shall include a GAC bed which will be used to scrub out any decontamination agents that may be present. The bed volume will be determined with consultation of the WAM.

(I) The exhaust duct from the air lock shall include a HEPA filter. The HEPA filter shall be installed downstream of the GAC bed.

(J) The exhaust ducting material through the GAC bed shall be made of 304 or 316 stainless steel to minimize corrosion from the decontamination agents. This requirement applies to the exhaust ducts for the chamber and air lock.

(K) The chamber and airlock shall be capable of operating at negative pressures. The pressure in the decontamination chamber shall be lower than that inside the airlock. It is anticipated that the chamber will operate at -0.15 inches of water, while the airlock is maintained at -0.1 inches of water. This

pressure is relative to the surrounding enclosure. This will prevent leakage from the chamber and air lock into the ambient environment.

(L) The doors of the chamber and air lock shall be connected to the control system so that the system will switch into a manual mode if the doors are open.

(M) The control system shall have the capabilities to continuously log the parameters of the HVAC control system including: temperature, pressure, volumetric flow rate, and relative humidity. These shall be recorded at an interval of once every 5 seconds. All necessary software shall be included as part of the scope of this project.

TASK 1. Installation of Decontamination Chamber

The decontamination chamber was placed in its permanent location as part of a previous work assignment. This task shall involve completion of the installation so that the chamber is functional. This included completion of lighting and electrical connections.

TASK 2. Installation and Demonstration of HVAC Control System

The HVAC control system shall be permanently installed on the decontamination chamber located in H130. After installation of the HVAC control system has been completed the contractor shall demonstrate that the system meets the EPA WAM approved design specifications. Training shall be provided for up to 5 EPA personnel and/or NHSRC designated contractor personnel.

VIII. DELIVERABLE SCHEDULE

The project deliverable schedule for all tasks and subtasks is outlined in Table 1 below.

Table 1: Deliverables Schedule

Deliverable	Completion
Installation of Decontamination Chamber (Task 1)	15 days after award
Installation of HVAC System (Task 2)	30 days after Task 1
Demonstration and training shall be completed no later than May 31, 2009	

IX. REPORTING REQUIREMENTS

- The monthly invoice reports for this work assignment shall provide a detailed description of any equipment or expendables that have been purchased by the contractor for use on the projects discussed herein.
- All document deliverables shall be supplied in both electronic and hard copy directly to the EPA WAM.

- Design drawings shall be supplied in a format readily usable in Microsoft Powerpoint or Word, without added plugins or enhanced features, for presentation by the EPA WAM.
- No QAPP is required for this work assignment.

NHSRC QUALITY ASSURANCE REQUIREMENTS FORM
Attachment 1 to the Statement of Work

I GENERAL INFORMATION

Title: Design and Fabrication of NHSRC's Decontamination Technologies Application Study Chamber

Description: The proposed effort will design and fabricate an enclosed, single access point, chamber (henceforth, chamber) within the current Homeland Security Enclosure located within High Bay Room 130.

Project ID: DCMD 3.40

Status: Original

Number Ammended:

QA Category: *IV*

Action Type: In-House

Peer Review Category: *IV*

Security Classification: Unclassified

Project Type: other

QAPP Status 1: Not Applicable

QAPP Status 2: Not Applicable

QAPP Status 3: Not Applicable

Vehicle Status:

If you are processing an IAG or CRADA, the responsibility for QA must be negotiated within the agreement. The TLPs in consultation with the QAMs in the various organizations must agree on, and document, which organization will take the lead for QA, the names of the QAM and TLP from each organization, and the QA requirements that will be adhered to during the agreement. Include this info in the IAG/CRADA package.

II SCOPE OF WORK

Does the Statement of Work contain the appropriate QA language? *No.*

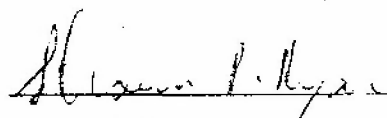
The awardee shall comply with all requirements as delineated on the "Quality Assurance Planning Requirements Form (QARF)" included with this extramural action. The contractor shall prepare a QAPP in accordance with the R-2 and R-5 and/or the attachments provided with the SOW. The QAPP must be approved prior to the start of any work. Additional information related to QA requirements can be found at <http://www.epa.gov/quality/qs-docs/r5-final.pdf>

Does this extramural action involve the collection, generation, use, and/or reporting of environmental data; the design, construction, and operation of environmental technologies; or development of software, models, or methods? *No.*

(If "No" then skip to Section IV, and sign the form.)

IV SIGNATURE BLOCK

The signatures below verify that the Statement of Work (SOW) has been reviewed to ascertain the necessary QA and QC activities required to comply with EPA Order 5360.1 A2, that the COR understands these requirements, and that the COR will ensure that the quality requirements indicated on the previous pages of this form are incorporated into all associated SOWs. *(Sign/date below, obtain a concurrence signature from the QA Staff, and submit the form along with the other extramural action documentation.)*



Shawn Ryan
NHSRC-DCMD Technical Lead Person

07/03/2008
Date



Eletha Roberts
NHSRC-IO QA Staff Member

07/03/2008
Date

Attachment # 2

**NHSRC QA
To the Statement of Work
Requirements/Definitions List**

EPA's Quality System Website: <http://www.epa.gov/quality>
EPA's Requirements and Guidance Documents: http://www.epa.gov/quality/qa_docs.html
EPA's Quality System Website: <http://www.epa.gov/quality/qs-docs/r5-final.pdf>

In accordance with EPA Order 5360.1 A2, conformance to ANSI/ASQC E4 must be demonstrated by submitting the quality documentation described herein. All Quality documentation shall be submitted to the Government for review. The Government will review and return the quality documentation, with comments, and indicate approval or disapproval. If the quality documentation is not approved, it must be revised to address all comments and shall be resubmitted to the Government for approval. Work involving environmental data collection, generation, use, or reporting shall not commence until the Government has approved the quality documentation. The Quality Assurance Project Plan (QAPP) shall be submitted to the Government at least thirty (30) days prior to the beginning of any environmental data gathering or generation activity in order to allow sufficient time for review and revisions to be completed. After the Government has approved the quality documentation, the Contractor shall also implement it as written and approved by the Government.

NHSRC's Quality System Specifications for Extramural Actions -

These requirements typically pertain to single project efforts. The five specifications are:

- (1) a description of the organization's Quality System (QS) and information regarding how this QS is documented, communicated and implemented;
- (2) an organizational chart showing the position of the QA function;
- (3) delineation of the authority and responsibilities of the QA function;
- (4) the background and experience of the QA personnel who will be assigned to the project; and
- (5) the organization's general approach for accomplishing the QA specifications in the SOW.

NHSRC QA Requirements/Definitions List

Category Level Designations (determines the level of QA required):

- ☐ **Category I Project** - applicable to studies performed to generate data used for enforcement activities, litigation, or research project involving human subjects. The QAPP shall address all elements listed in "EPA Requirements for QA Project Plans, EPA QAR-5.
- ☐ **Category II Project** - applicable to studies performed to generate data used in support of the development of environmental regulations or standards. The QAPP shall address all elements listed in "EPA Requirements for QA Project Plans, EPA QAR-5.
- ☐ **Category III Project** - applicable to projects involving applied research or technology evaluations. The QAPP shall address the applicable sections of "EPA Requirements for QA Project Plans, EPA QAR-5 as outlined in the NHSRC's QMP: QAPP requirements for the specific project type (see below)
- ☐ **Category IV Project** - applicable to projects involving basic research or preliminary data gathering activities. The QAPP shall address the applicable sections of "EPA Requirements for QA Project Plans, EPA QAR-5 as outlined in the NHSRC's QMP: QAPP requirements for the specific project type (see below).

Project Types:

These outlines of NHSRC's QAPP Requirements for various project types, from Appendix B of the NHSRC QMP (except where otherwise noted), are condensed from typically applicable sections of R-5 (EPA Requirements for QA Project Plans) and are intended to serve as a starting point when preparing a QAPP. These lists and their format may not fit every research scenario and QAPP's must conform to applicable sections of R-5 in a way that fully describes the research plan and appropriate QA and QC measures to ensure that the data are of adequate quality and quantity to fit their intended purpose.

- ☐ **Applied Research Project** - pertains to a study performed to generate data to demonstrate the performance of accepted processes or technologies under defined conditions. These studies are often pilot- or field-scale. The QAPP shall address all requirements listed in "QAPP Requirements for Applied Research Projects" from Appendix B of the NHSRC QMP.
- ☐ **Basic Research Project** - pertains to a study performed to generate data used to evaluate unproven theories, processes, or technologies. These studies are often bench-scale. The QAPP shall address all requirements listed in "QAPP Requirements for Basic Research Projects" from Appendix B of the NHSRC QMP.
- ☐ **Design, Construction, and/or Operation of Environmental Technology Project** - pertains to environmental technology designed, constructed and/or operated by and/or for EPA. The QAPP shall address requirements in the EPA Quality System document "Guidance on Quality Assurance for Environmental Technology Design, Construction, and Operation" G-11, at <http://www.epa.gov/quality/QS-docs/q11-final-05.pdf>. For additional information, you may refer to Part C of "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology," ANSI/ASQC E4-1994, American Society for Quality Control, Milwaukee, WI, January 1995.
- ☐ **Geospatial Data Quality Assurance Project** - pertains to data collection; data processing and analysis; and data validation of geospatial applications. The QAPP shall address requirements in the EPA Quality System document "Guidance for Geospatial Data Quality Assurance Project Plans" G-5S at <http://www.epa.gov/quality/QS-docs/q5s-final-05.pdf>.
- ☐ **Method Development Project** - pertains to situations where there is no existing standard method, or a standard method needs to be significantly modified for a specific application. The QAPP shall address all requirements listed in "QAPP Requirements for Method Development Projects" from Appendix B of the NHSRC QMP.
- ☐ **Model Development Project** - includes all types of mathematical models including static, dynamic, deterministic, stochastic, mechanistic, empirical, etc. The QAPP shall address requirements in the EPA Quality System document "Guidance for Quality Assurance Project Plans for Modeling" G-5M at <http://www.epa.gov/quality/QS-docs/q5m-final.pdf>.
- ☐ **Sampling and Analysis Project** - pertains to the collection and analysis of samples with no objectives other than to provide characterization or monitoring information. The QAPP shall address all requirements listed in "QAPP Requirements for Sampling and Analysis Projects" from Appendix B of the NHSRC QMP.
- ☐ **Secondary Data Project** - pertains to environmental data collected from other sources, by or for EPA, that are used for purposes other than those originally intended. Sources may include: literature, industry surveys, compilations from computerized databases and information systems, and computerized or mathematical models of environmental processes. The QAPP shall address all requirements listed in "QAPP Requirements for Secondary Data Projects" from Appendix B of the NHSRC QMP.
- ☐ **Software Development and Data Management Project** - pertains to software development, software/hardware systems development, database design and maintenance, data validation and verification systems. The QAPP shall address all requirements listed in "QAPP Requirements for Software Development Projects" from Appendix B of the NHSRC QMP.

Definitions:

Environmental Data - These are any measurement or information that describe environmental processes, location, or conditions; ecological or health effects directly from measurements, produced from software and models, and compiled from other sources such as data bases or the literature. For EPA, environmental data include information collected directly from measurements, produced from software and models, and compiled from other sources such as data bases or literature.

Incremental Funding - Incremental funding is partial funding, no new work.

Quality Assurance (QA) - Quality assurance is a system of management activities to ensure that a process, item, or service is of the type and quality needed by the customer. It deals with setting policy and running an administrative system of management controls that cover planning, implementation, and review of data collection activities and the use of data in decision making. Quality assurance is just one part of a quality system.

Quality Assurance Project Plan (QAPP) - A QAPP is a document that describes the necessary quality assurance, quality control, and other technical activities that must be implemented to ensure that the results of the work performed will satisfy the stated performance criteria. A QAPP documents project-specific information.

Quality Control (QC) - Quality control is a technical function that includes all the scientific precautions, such as calibrations and duplications, which are needed to acquire data of known and adequate quality.

Quality Management Plan (QMP) - A QMP is a document that describes an organization's/program's quality system in terms of the organizational structure, policy and procedures, functional responsibilities of management and staff, lines of authority, and required interfaces for those planning, implementing, documenting, and assessing all activities conducted. A QMP documents the overall organization/program, and is primarily applicable to multi-year, multi-project efforts. An organization's/program's QMP shall address all elements listed in the

Requirements for Quality Management Plans" in Appendix B of the NHSRC QMP.

Quality System - A quality system is the means by which an organization manages its quality aspects in a systematic, organized manner and provides a framework for planning, implementing, and assessing work performed by an organization and for carrying out required quality assurance and quality control activities.

R-2. EPA Requirements for Quality Management Plans (EPA/240/B-01/002) March, 2001 <http://www.epa.gov/quality/QS-docs/r2-final.pdf>.

R-5. EPA Requirements for Quality Management Plans (EPA/240/B-01/002) March, 2001 <http://www.epa.gov/quality/QS-docs/r5-final.pdf>.

Substantive Change - Substantive change is any change in an activity that may alter the quality of data being used, generated, or gathered.

Technical Lead Person (TLP) - This person is technically responsible for the project. For extramural contract work, the TLP is typically the contracting officer's representative (COR). For intramural work, the TLP is typically the Principal Investigator.

Abbreviations:

COR	Contracting Officer's Representative	IAG	Interagency Agreement
NHSRC	National Homeland Security Research Center	QA	Quality Assurance
NRMRL	National Risk Management Research Laboratory	QAM	Quality Assurance Manager
QA ID	Quality Assurance Identification	QMP	Quality Management Plan
QAPP	Quality Assurance Project Plan	SOW	Statement of Work
QS	Quality System	CRADA	Cooperative Research & Development Agreement
TLP	Technical Lead Person		

Attachment #2 to the Statement of Work
Revision 1, March 2006
NHSRC 06/02